Amendments to the Claims

The following listing of claims replaces all prior versions and listings of claims in this application:

1. (Previously Presented) Solid porous cellular hydrocolloid carriers comprising porous freeze-dried hydrocolloid beads that include viable microorganisms entrapped therein, wherein the hydrocolloid is an alginate, agarose, Low Methoxy Pectin (LMP), polyvinyl alcohol (PVA), Carrageenan or xanthan plus locust bean gum (LBG); and wherein the freeze-dried beads have diameters ranging from 50 microns to 500 microns; have a residual moisture of no more than 12%, and include a cryoprotectant comprising glycerol in an amount of 10 to 50 % by weight of the hydrocolloid, wherein a not less than 50% to 95% of the microorganisms are viable both during freeze drying and after 12 to 36 months of storage as a dried solid at temperatures at or below minus 18°C.

Claims 2-6. (Cancelled)

7. (Original) The solid cellular carriers according to claim 1, wherein exposure to moisture induces growth of the entrapped microorganism within the hydrocolloid beads.

8. (Original) The solid cellular carriers according to claim 1, wherein exposure to moisture induces extended release into the environment of either the entrapped microorganisms or active products produced by the microorganisms.

Claim 9. (Cancelled)

10. (Previously Presented) The solid cellular carriers of claim 1, wherein the hydrocolloid is alginate.

11. (Previously Presented) The solid cellular carriers of claim 1, wherein the hydrocolloid carriers are biodegradable.

12. (Original) The solid cellular carriers of claim 1, wherein the microorganisms are bacteria or fungi capable of controlling plant pathogens.

13. (Original) The solid cellular carriers of claim 12, wherein the microorganisms are fungi selected from the group consisting of *Trichoderma harzianum, Trichoderma lignorum* and *Trichoderma viride.*

14. (Original) The solid cellular carriers of claim 12, wherein the microorganisms are bacteria capable of controlling plant pathogens.

15. (Original) The solid cellular carriers of claim 14, wherein the bacteria are selected from the group consisting of *Pantoae agglomerans, Serratia marcescens, Bacillus Spp., Enterobacter Spp., Azotobacter, Azospirillum* and *Pseudomonas.*

16. (Original) The solid cellular carriers of claim 8, wherein the active products produced by the microorganisms are enzymes or antibiotics selected from the group consisting of chitinase, gluconases, proteases, pyrolnitrin, pyrolniteorin, phenazines, DAPG (2,4,diacetylfluoroglucinol), ferrichrome A and desferrioxamine B.

Claim 17. (Cancelled)

18. (Original) The solid cellular carriers of claim 1, further comprising one or more of nutrients, fillers, agents for controlling the porosity of the carriers, agents that prevent damage to the viable microorganisms during freezing, or agents that control cell wall thickness.

19. (Original) The solid cellular carriers of claim 18, wherein the nutrients or fillers are selected from the group consisting of chitin, pectin, cellulose, lignin, bentonite, kaolin, starch, glycerol and lowfat milk.

20. (Original) The solid cellular carriers of claim 14, wherein the plant pathogens are selected from the group consisting of *Pythium aphanidermatum, S. scabies, Verticillium*

dahliae, Verticillium albo-atrum, Fusarium solani, Rhizoctonia solani, Cylindrocladium floridanum, Clavibacter michiganense subsp. sepidonicum, Phytophthora megasperma pv. glycinea race 1, Pythium spp., Septoria spp. and *Sclerotinia.*

Claim 21. (Cancelled)

22. (Currently Amended) A method for controlling plant pathogens in an agricultural crop which comprises: applying the solid porous cellular carriers ~~comprising dried hydrocolloid beads~~ according to claim 1 ~~and having viable microorganisms entrapped therein~~ to an entity selected from seeds, seedlings or plants of an agricultural crop wherein the microorganisms or active products produced by the microorganisms are ~~eventually~~ released from the beads to effectively control plant pathogens.

23. (Currently Amended) The method of claim 22, which further comprises contacting the beads ~~to~~ with moisture to induce extended release into the surrounding environment of either the entrapped microorganisms or active products produced by the microorganisms.

24. (Original) The method of claim 23, wherein said hydrocolloid is alginate.

Claim 25. (Cancelled)

26. (Original) The method of claim 22, wherein the microorganisms are bacteria or fungi capable of controlling plant pathogens.

27. (Original) The method of claim 26, wherein said fungi are selected from the group consisting of *Trichoderma harzianum, Trichoderma lignorum* and *Trichoderma viride.*

28. (Original) The method of claim 26, wherein said bacteria are selected from the group consisting of *Pantoae agglomerans, Serratia marcescens, Bacillus Spp., Enterobacter Spp., Azotobacter, Azospirillum* and *Pseudomonas.*

29. (Original) The method of claim 22, wherein the active products produced by the microorganisms are enzymes or antibiotics selected from the group consisting of chitinase, gluconases, proteases, pyrolnitrin, pyrolniteorin, phenazines, DAPG (2,4,diacetylfluoroglucinol), ferrichrome A and desferrioxamine B.

Claim 30. (Cancelled)

31. (Currently Amended) A method of producing the cellular solid carriers according to claim 1 which comprises ~~comprising~~:

mixing a hydrocolloid solution with viable microorganisms, wherein the hydrocolloid is an alginate, agarose, Low Methoxy Pectin (LMP), polyvinyl alcohol (PVA), Carrageenan or xanthan plus locust bean gum (LBG);

adding a cryoprotectant comprising glycerol in an amount of 10 to 50 % by weight of the hydrocolloid to the hydrocolloid solution and microorganisms to form a mixture; and

freeze drying the mixture under conditions which preserve the porosity of the mixture, thereby forming freeze-dried cellular solid hydrocolloid beads having diameters ranging from 50 microns to 500 microns and a residual moisture of no more than 12%, with the beads comprising viable microorganisms entrapped in the porosity of the beads, wherein not less than 50% to 95% of the microorganisms are viable both during freeze drying and after 12 to 36 months of storage as a dried solid at temperatures at or below minus 18°C.

Claims 32-33. (Cancelled)

34. (Original) The method of claim 31, which further comprises adding to the mixture one of more of nutrients, fillers, agents for controlling the porosity of the beads, agents that prevent damage to the viable microorganisms during freezing, or agents that control cell wall thickness.

35. (Original) The method of claim 34, wherein the nutrients or fillers are selected from the group consisting of chitin, pectin, cellulose, lignin, bentonite, kaolin, starch, and lowfat milk.

Claims 36-42. (Cancelled)

43. (Previously Presented) The solid cellular carriers of claim 1, wherein the carriers have a bead wall thickness of about 1.55 micrometers to about 11.43 micrometers.

Claim 44. (Cancelled)

45. (Currently Amended) Solid porous cellular hydrocolloid carriers ~~consisting essentially of~~ comprising porous freeze-dried hydrocolloid beads that include viable microorganisms entrapped therein, wherein the hydrocolloid is an alginate, agarose, Low Methoxy Pectin (LMP), polyvinyl alcohol (PVA), Carrageenan or xanthan plus locust bean gum (LBG); and wherein the freeze-dried beads have diameters ranging from 50 microns to 500 microns; have a residual moisture of no more than 12%, include a cryoprotectant comprising glycerol in an amount of 10 to 50 % by weight of the hydrocolloid, and include one or more of nutrients or fillers selected from the group consisting of chitin, pectin, cellulose, lignin, bentonite, kaolin, starch, glycerol and lowfat milk ~~in an amount sufficient to control the porosity of the beads~~, wherein not less than 50% to 95% of the microorganisms are viable both during freeze drying and after 12 to 36 months of storage as a dried solid at temperatures at or below minus 18°C.

46. (Currently Amended) A method for controlling plant pathogens in an agricultural crop which comprises: applying the solid porous cellular carriers ~~comprising dried hydrocolloid beads~~ according to claim 45 ~~and having viable microorganisms entrapped therein~~ to an entity selected from seeds, seedlings or plants of an agricultural crop wherein the microorganisms or active products produced by the microorganisms are ~~eventually~~ released from the beads to effectively control plant pathogens.

47. (Currently Amended) A method of producing the cellular solid carriers according to claim 45 which comprises ~~comprising~~:

mixing a hydrocolloid solution with viable microorganisms, wherein the hydrocolloid is an alginate, agarose, Low Methoxy Pectin (LMP), polyvinyl alcohol (PVA), Carrageenan or xanthan plus locust bean gum (LBG);

adding a cryoprotectant comprising glycerol in an amount of 10 to 50 % by weight of the hydrocolloid to the hydrocolloid solution and microorganisms to form a mixture;

including in the mixture one or more of nutrients or fillers selected from the group consisting of chitin, pectin, cellulose, lignin, bentonite, kaolin, starch, glycerol and lowfat; and

freeze drying the mixture under conditions which preserve the porosity of the mixture, thereby forming freeze-dried cellular solid hydrocolloid beads having diameters ranging from 50 microns to 500 microns and a residual moisture of no more than 12%, with the beads comprising viable microorganisms entrapped in the porosity of the beads, wherein not less than 50% to 95% of the microorganisms are viable both during freeze drying and after 12 to 36 months of storage as a dried solid at temperatures at or below minus 18°C.

Claim 48. (Cancelled)